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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,675	03/18/2004	Michael Degner	81095340 (FGT 3F3B)	8003
36865	7590	10/18/2006	EXAMINER	
ALLEMAN HALL MCCOY RUSSELL & TUTTLE, LLP			PATEL, DHARTI HARIDAS	
806 S.W. BROADWAY, SUITE 600			ART UNIT	PAPER NUMBER
PORTLAND, OR 97205			2836	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/804,675	DEGNER ET AL.	
	Examiner	Art Unit	
	Dharti H. Patel	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/8/05, 10/4/04, 4/19/04, 3/18/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-26 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 7,036,469. Although the conflicting claims are not identical, they are not patentably distinct from each other. Claim 1 of the application is recited in patented claim 1. Claim 1 of the application is broader in scope than claim 1 of the patent in that claim 1 of the application does not recite a first electromechanical actuator coil coupled to one of a plurality of cylinder valves of an internal combustion engine, a first switch, a second switch, a third switch, a

fourth switch, and a controller. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an electronic circuit without a plurality of cylinder valves as claimed to provide a simpler circuit.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Archer, Patent No. 5,940,262.

With respect to claim 1, Archer teaches an electronic circuit [Fig. 2], comprising a first electromechanical actuator coil [Fig. 2, 18; Left side coil of the two coils 18] coupled to a cylinder valve of an internal combustion engine [Col. 4, lines 28-31], a second electromechanical actuator coil [Fig. 2, 18; Right side coil of the two coils 18], where a first end of said second electromechanical actuator coil is coupled to a common reference [Fig. 2; The point where the dash line connects two coils 18] with a first end of said first electromechanical actuator coil; a first energy storage device [Fig. 1, 27], where a first end of said first energy storage device is coupled to said common reference [Fig. 2; The first end of said capacitor 27 is coupled to the common reference via diode 25]; and a second

energy storage device [Fig. 2, 32], where a first end of said second energy storage device is coupled to said common reference [Fig. 2; The first end of said capacitor 32 is coupled to the common reference via diode 31].

With respect to claim 2, Archer teaches that the first energy storage device is a first capacitor [Fig. 2, 27].

With respect to claim 3, Archer teaches that the second energy storage device is a second capacitor [Fig. 2, 32].

With respect to claim 4, Archer further comprises a voltage source [Fig. 2, 35, Battery], with a first end of said source coupled to a second end of said first energy storage device [Fig. 2, 27; The first end of said source 35 is coupled to the energy storage device 27 via coils 18, and line 21].

With respect to claim 5, Archer teaches that a second end of said source [Fig. 2, 35, Battery] is coupled to a second end of said second energy storage device [Fig. 2, 32; The second end of said source 35 is coupled to a second end of said second energy storage 32 at node 28].

With respect to claim 6, Archer further comprises a first one way current device [Fig. 2, 25], with a first end of said one way current device coupled to a second end of said first electromechanical actuator coil [Fig. 2; The first end of said one way current device, cathode of diode 25, is coupled to a second end of said first mechanical actuator coil at the common reference node].

With respect to claim 7, Archer further comprises a second one way current device [Fig. 2, 26], with a first end of said one way current device coupled

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to a second end of said second electromechanical actuator coil [Fig. 2; The first end of said one way current device, cathode of diode 26, is coupled to a second end of the right side coil of the two coils 18].

With respect to claim 8, Archer further comprises a first switch [Fig. 2, 20, 1st Switch] for actuating said first electromechanical actuator coil [Fig. 2; Left side coil of the two coils 18]; and a second switch [Fig. 2, 2nd Switch] for actuating said second electromechanical actuator coil [Fig. 2: Right side coil of the two coils 18].

With respect to claim 9, Archer teaches a system [Fig. 2] comprising a dual-coil half bridge converter adapted to be coupled to a single or multiple coil actuator of a cylinder valve, the cylinder valve in an internal combustion engine [Fig. 2, 18, Col. 4, lines 28-31, the converter having a first [Fig. 2, 27] and second [Fig. 2, 32] capacitor and a voltage source [Fig. 2, 35, Battery, Col. 4, lines 31-33], the converter actuated via switches [Fig. 2, 1st Switch and 2nd Switch, Col. 4, lines 40-42]] to individually energize coils [Fig. 2, Two coils 18] in said dual coil actuator.

With respect to claim 10, Archer teaches that the dual-coil half bridge converter maintains a charge balance on said first and second capacitor [Abstract, lines 10-11, Col. 3, lines 6-9].

With respect to claim 11, Archer teaches that the converter is adapted to be coupled to a plurality of engine cylinder valves [Fig. 1, Col. 1, lines 6-9, Col. 2, lines 14-16, Col. 4, lines 28-31].

With respect to claim 12, Archer teaches that the dual coil half bridge converter [Fig. 2, made up of coils 18] maintains a charge balance on said first [Fig. 2, 27] and second [Fig. 2, 32] capacitor even when at least one cylinder of the engine is deactivated while at least one other cylinder carries out combustion.

With respect to claim 13, Archer teaches that the capacitors form a dual voltage source as disclosed in Fig. 2.

With respect to claim 14, Archer teaches that the dual coil half bridge converter is adapted to be coupled to at least two dual coil actuators [Fig. 2, two coils 18] of two cylinder valves [Col. 4, lines 28-31], wherein the converter is configured to balance voltage of said first [Fig. 2, 27] and second [Fig. 2, 32] capacitor.

With respect to claim 15, Archer teaches a dual coil half bridge power converter system [Fig. 1, Fig. 2], comprising a power source [Fig. 2, 35, Battery]; a single or multiple coil actuator [Fig. 2, 18] of a cylinder valve, the cylinder valve in an internal combustion engine [Abstract, lines 10-11], only one actuating switch [Fig. 2, 1st switch or 2nd switch] for actuating each coil [Fig. 2, 18] in said actuator; and an energy storage device [Fig. 2, capacitor 27 or 32] for storing energy during deactivation of at least one coil.

With respect to claim 16, Archer further comprises a unidirectional current device [Fig. 2, 26] for allowing freewheeling current during deactivation of at least one coil [Fig. 2, 18].

With respect to claim 17, Archer teaches that the storage device includes two capacitors [Fig. 2, Capacitors 27 and 32] in a split voltage power supply topology [Fig. 2, 35, Battery].

With respect to claim 18, Archer teaches that the energy storage device includes two capacitors [Fig. 2, Capacitors 27 and 32] in a boosted power supply [Fig. 2, 35, Battery] topology.

With respect to claim 19, Archer further comprises a plurality of dual coil actuators [Fig. 2; Two coils 18] of cylinder valves of an engine [Abstract, lines 1-4, Col. 4, lines 28-31], and only one actuating switch [Fig. 2, 2nd Switch] coupled to each coil of said plurality of coils [Fig. 2; Two coils 18].

With respect to claim 20, Archer teaches a system [Fig. 2] comprising a power supply [Fig. 2, 35, Battery] with a positive and negative terminal [Col. 4, lines 31-33]; a first coil [Fig. 2; Left side coil 18 of the two coils] coupled to a cylinder valve actuator of an engine, said first coil having a first end and a second end; a first switch [Fig. 2, 20, 1st Switch] coupled between one end of said first coil [Fig. 2, 18; Left side of coil 18] and said positive terminal of said power supply [Fig. 2, 35]; a first capacitor [Fig. 2, 27] coupled between said positive terminal of said power supply [Fig. 2, 35] and said second end of said first coil [Fig. 2, 18]; a first diode [Fig. 2, 25] coupled between said second end of said first coil and said negative terminal; a second coil [Fig. 2, 18; Right side of 18 of the two coils], said second coil having a first end and a second end, said first end of

said second coil coupled to said second end of said first coil; a second capacitor [Fig. 2, 32] coupled between said first end of said second actuator and said negative terminal; a second switch [Fig. 2, 2nd Switch] coupled between said second end of said second capacitor [Fig. 2, 32] and said negative terminal [Fig. 2; Negative terminal of power supply 35]; and a second diode [Fig. 2, 26] coupled between said second end of said second coil and said positive terminal.

With respect to claim 21, Archer teaches that the negative terminal of said power supply [Fig. 2, 35] is coupled to a ground [Fig. 2, line 21; Col. 2, line 53].

With respect to claim 22, Archer teaches that the switches control actuation of at least one cylinder valve of an internal combustion engine [Col. 4, lines 40-42].

With respect to claim 23, Archer teaches that the second coil [Fig. 2, 18; Right side coil 18 of the two coils] is coupled to said cylinder valve actuator [Col. 4, lines 28-31; The control circuit comprising the two coils is coupled to the cylinder valve actuator].

With respect to claim 24, Archer teaches that the second actuator [Fig. 2, 18] is coupled to another cylinder valve actuator of said engine [Col. 4, lines 28-31; The control circuit comprising the two actuators is coupled to the cylinder valve actuator of the engine].

With respect to claim 25, Archer teaches that the system further comprises third and fourth actuators, wherein the system is configured to balance voltage across the first, second, third, and fourth actuators [Col. 4, lines 13-23].

With respect to claim 26, Archer teaches that the second end of the first coil is coupled to ground [Fig. 2, 21; The second end of the first coil 18 is coupled to ground 21 via diode 25, or via battery 35].

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dharti H. Patel whose telephone number is 571-272-8659. The examiner can normally be reached on 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800, Ext. 36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

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Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DHP
09/26/06

A handwritten signature in black ink, appearing to read 'B. Sircus', with a stylized, flowing script.

BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800